

Astrophysical Applications of Aluminum, Strontium Lanthanate Phosphors Doped with Terbium and Europium

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Abstract: $Al_2Sr_2La_2O_8$ doped (ASL) with terbium and europium ion was synthesized by solid state reaction under air atmosphere. Its characterization was systematically analyzed by SEM, X-ray diffraction (XRD) and photoluminescence spectra (PL). Photoluminescence emission spectra having excitations at around 254, 268, 278nm revealed that Eu ions were present in trivalent oxidation states. The emission peaks are found at 540(green), 588,(Yellow) and 626nm(red) are observed. Scanning Electron Microscopy (SEM) was implemented to investigate the surface morphology of present phosphor. The obtained results on $Al_2Sr_2La_2O_8$: Tb, Eu is suitable for green-red light source using UV light as the primary excitation. In addition with Aluminum, Strontium Lanthanate phosphors are used for lighting can work to minimize electricity usage, and decreases the excess light pollution, minimizing light pollution has benefits for people and for the surrounding ecosystems. The best example of ASL is lighting use is around Peurto Mosquito, a bioluminescent bay on vieques, peurto rico, the bioluminescence is more visible and healthier, and people's eyes get a few more minutes to adjust to the dark. Another use of the ASL is lighting is around the lowell astrophysical observatory. Astrophysical observatories require low lighting to properly see stars and often use best practices in light-pollution safe lighting. Now the observatory is lined with paths that glow at night. Researchers and visitors to safely find their way in the dark, without the use of bright electric lights.

Keywords: Astrophysical Applications

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